

Chapter Four

Bullet Flight Paths and the Official Version

"I made up a basic plot plan of all trajectories... and I certainly feel that there were only eight shots fired and I accounted for all eight shots." DeWayne Wolfer, September 21, 1971, pp. 152-153.

"(F)ailure to clear off and then rope off the pantry area as quickly as possible may have resulted in the loss of bullet fragments, or possible other evidence which might have been helpful in reconstruction of the crime. Kitchen employees, of course, had mopped up blood stains. Such stains and drops are often helpful in determining how the victim, or victims, fell, and the direction of the fatal blow. In this instance, it was not a crucial factor." Robert A. Houghton, Special Unit: Senator, p. 301.

Although, in the aftermath of the Robert Kennedy assassination Chief Houghton expressed what amounted to an academic concern about the loss of evidence of potential importance, his statement also expresses the feeling that in the context of the particular murder such a failing had no unfortunate consequences. From examining the record of the official investigation, in fact, it appears that none of the key officials felt that questions of flight paths or of physical evidence had any great importance. Had such evidence been examined with somewhat more care, very different conclusions might have emerged about the shooting of Robert Kennedy.

In the John F. Kennedy assassination, however faulty the conclusions of the Warren Commission may have been, at least such issues were dealt with directly. The original FBI report to the Commission

stated that President Kennedy and Governor Connally had been wounded by separate shots. Unlike the FBI, however, the Warren Commission recognized that these apparent hits were spaced too closely together to allow one gunman using a Mannlicher Carcano to have fired them both. Thus it evolved the famous "single bullet theory," attempting to account for both sets of wounds in such a way that the necessity for a second gunman could be avoided.

Although the single bullet theory and other Commission findings regarding flight paths and physical circumstances were at once subjected to a furious and massive controversy, the Warren Commission was obliged to publish not only their conclusions on these matters but the evidence on which it was based. The Zapruder film and other photographic evidence were widely reviewed, and the exact layout of Dealey Plaza and its geographic details were extensively researched by experts and amateurs alike. The testimony of witnesses was made available in the Warren Commission documents and hearings, and more was available from the archives. Critics and independent analysts who were not satisfied with official information were able to secure more through their own initiative. Over a period of years, the issues of physical reconstruction in the murder of President Kennedy were a subject of the most intensive and searching scrutiny and debate.

The cases of Dallas and Los Angeles are similar in the apparent inadequacy of the official explanations of flight paths and physical circumstances. They differ markedly, however, both in the extent to which information was made available to the public and the volume and intensity of study which this information received. Because of these problems, any serious analysis of flight paths in the Robert Kennedy case suffers from any enormous dearth both of information and of impartial examination. This makes the seriousness of the questions

Kennedy - 187 P.C.

TIME OCCURRED 6-5-68	LOCATION OF OCCURRENCE Ambassador Hotel	DIVISION OF OCCURRENCE Rampart Division
Name, Assignment, Division Lt. D.W. Mann, O-I-C, Criminalistics Section, S.I.D.		DATE & TIME REPORTED 7-8-68

The weapon used in this case was an Iver Johnson, Cadet Model, .22 caliber, 8 shot revolver (2 1/2" barrel). This weapon had eight expended shell casings in the cylinder at the time of recovery from the suspect. A trajectory study was made of the physical evidence which indicated that eight shots were fired as follows:

- #1 - Bullet entered Senator Kennedy's head behind the right ear and was later recovered from the victim's head and booked as evidence.
- #2 - Bullet passed through the right shoulder pad of Senator Kennedy's suit coat (never entered his body) and traveled upward striking victim Schrade in the center of his forehead. The bullet was recovered from his head and booked as evidence.
- #3 - Bullet entered Senator Kennedy's right rear shoulder approximately seven inches below the top of the shoulder. This bullet was recovered by the Coroner from the 6th cervical vertebrae and booked as evidence.
- #4 - Bullet entered Senator Kennedy's right rear back approximately one inch to the right of bullet #3. This bullet traveled upward and forward and exited the victim's body in the right front chest. The bullet passed through the ceiling tile, striking the second plastered ceiling and was lost somewhere in the ceiling interspace.
- #5 - Bullet struck victim Goldstein in the left rear buttock. This bullet was recovered from the victim and booked as evidence.
- #6 - Bullet passed through victim Goldstein's left pants leg (never entering his body) and struck the cement floor and entered victim Stroll's left leg. The bullet was later recovered and booked as evidence.
- #7 - Bullet struck victim Weisel in the left abdomen and was recovered and booked.
- #8 - Bullet struck the plaster ceiling and then struck victim Evans in the head. This bullet was recovered from the victim's head and booked as evidence.

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Wolfer's bullet inventory, filed as an Employee's Report shortly over a month after the assassination.

TIME TYPED -8-68 10 a.m. S.I.D.	DIVN. RPTG.	CLERK	EMPLOYEE(S) REPORTING	SER. NO.	DIVN.
APPROVING			DeWayne A. Wolfer		4.2

which have nonetheless arisen even more remarkable.

Perhaps the gravest doubts about the official claim that only eight bullets were fired in the Ambassador Hotel pantry arise from the evidence of extra bullets never officially acknowledged. But even apart from this ~~XXXXXXXXXX~~ information, it is very difficult to conclude that a persuasive accounting has been made even of the bullet damage which the Los Angeles Police admit took place. Without a persuasive accounting of these facts, however, an essential basis for the one-gun theory is missing. In the words of a legal petition filed in 1975 on behalf of Paul Schrade, "Even without the testimony of Sergeants Rozzi and Wright, Angelo DiPierro, Robert Alfeld and Coroner Thomas Noguchi, there is a tremendous dispute and controversy over the number of bullets fired, the direction in which they were fired, and over which bullet caused which hole and wound." As additional facts have become available, this controversy, far from abating, has become more intense. The doubts that only one gun could have fired the bullets admittedly recovered have never been more acute.

The facts available from officials, to date, have been meagre and disappointing. On July 8, 1968, 33 days after the assassination, a report was filed by DeWayne Wolfer in which an inventory appears of the eight bullets which were said to have been fired in the Ambassador Hotel pantry. This report was not made public, however, and only became available a year and a half later. Later in 1968, a "schematic diagram" of the shooting scene was also made up, but this was not released either. Neither document figured in the trial of Sirhan, which was concluded in April, 1969. Even after the article by Castellano and Nelson in the Los Angeles Free Press, no official attempt was made either to release infor-



Waller's "schematic diagram" of bullet flight paths.

mation in rebuttal, or, apparently, to re-evaluate the evidence in private in order to verify that the new charges were groundless.

During the years after 1969, nonetheless, statements and facts related to this question did trickle out periodically from official sources, and these, along with the Wolfer bullet inventory and the schematic diagram constitute the third potential source of information on the official version in this area. Yet the detailed, specific, and thorough information which would have enabled a thorough and exhaustive re-examination of the official position remained unavailable. On November 12-14, 1968, a reconstruction or "walk-through" of the crime was staged by the LAPD in which witnesses, through several shifts, were directed in a recreation of the circumstances of the shooting. Yet there is reason to doubt the complete accuracy of this review, and if records, reports or documents exist relating to it, they have never been made accessible. A videotape was made of at least parts of it, but only three frames have ever been published.

This, such as it is, is the sum of official information available on the physical circumstances of the case during the seven years after the shooting. Not only have the facts of the case been generally unavailable to private citizens, but even the substance of the official position itself has remained obscure, except in its broadest outline. When capable of being checked, moreover, it has proved not only inconsistent with the known facts, but often internally contradictory as well.

However incomplete the information on these questions available to the public, it was not, nonetheless, nonexistent. Official photographs were not generally available, but unofficial ones were. These included not only the critical Associated Press photograph discovered by Lillian Castellano, but others as well which bore on aspects of bullet

pathways and damage. Eyewitness accounts were available from the trial and others had appeared in the press. No official measurements of the layout of the Ambassador Pantry and adjoining rooms have ever been made public, but, remarkably, a careful set of measurements had been made by Lillian Castellano and Floyd Nelson on the days following the shooting. On the basis of these, it was possible to reconstruct many of the physical dimensions within which the shooting occurred.

The official theory of the flight paths could be checked to a limited extent using this information, and this was done with care and resourcefulness by a small number of people mostly around Los Angeles. But just as the information on these matters was much more restricted than in the case of Dallas, so the amount of attention devoted to them was only a fraction of that which occurred in the John Kennedy case. Unlike the situation in Dallas, a gunman was apprehended with a weapon on the scene. Unlike Dallas, he was observed by numerous witnesses, and had undeniably fired at the victim. Unlike Dallas, the suspect never denied his involvement, and also unlike Dallas, he lived to receive a full trial. Though there were clues, as there were in Dallas, that more than one gun might have been involved, the volume of initial evidence was sparse, and time was required for it to build. Meanwhile, most of the public was happy to believe that whatever Sirhan's outside involvements might conceivably have been at least he had fired all the shots. None seemed more eager to make this assumption than those who were charged with the official responsibility for investigating it.

During the legal proceedings which occurred in 1975, one more important piece of information became available, relating both to the official police version of the case and to facts of its immediate aftermath. These were official photographs which had been taken both on

the morning of June 5, when evidence was being examined and the first physical reconstructions attempted, and on June 11 when Wolfer and Noguchi and others examined the crime scene again and a more considered reconstruction was attempted. The photographs received by Schrade included only official police shots and appeared to comprise only a portion of these. None of the 1600 other frames collected by police during their investigation have yet been made available, and even photographs received by Schrade had no identification attached, describing either date, sequence, or purported significance. They were, nonetheless, exceptionally important evidence, and yielded information which had been obscure for years.

In the absence of explicit details submitted in support of the official bullet inventory and schematic diagram, many of these relevant details can nonetheless be derived, either independently or from these documents themselves. Given, for example, a reliable figure for the length of the first staem table (nine feet six inches) this figure can be compared with the length of this table as it appears in the police daiagram and a ration can thus be derived (1 foot equals _____) by which every other dimension in the diagram can be discovered. Since the police schematic was originally based on figures of measurement, this process presumably only reporduces the original numerical data used, converting diagrammatic information into numerical information. However, on the basis of the measurements done by Lillian Castellano and Floyd Nelson, it is also possible to check these dimensions independently. Based, therefore, on a variety of facts from both official and non-official sources, it is possible to analyse the official accounts both as to their consistency and their validity.

One particular aid in this process is the calculation of the location of ceiling panels in relation to the horizontal locations in the pantry. This is particularly important in view of the significance of the ceiling panels to flight paths questions, and since the panels apparently measure almost exactly two by four feet, it provides an easy method for measuring distance and location. When superimposed on a horizontal view of the pantry, the ceiling panels provide a convenient grid system, similar to those used on street maps, and by using this system locations in the pantry can easily be described. A chart showing a horizontal pantry layout appears on page _____, and a second version of the official police diagram with ceiling panel locations superimposed, appears on page _____. Other convenient orientation points also exist in the pantry. These include the four sets of fluorescent lights running in a line east west near the south edge of the B row of panels, the partition to the west of the ice machine, cracks on the floor in the vicinity where Kennedy fell, and the rectangular wooden mesh frames running beneath and below the ice machine at its front. By means of these and other devices the physical circumstances of the Robert Kennedy assassination can be much more easily considered, and the flight paths claims of the authorities much better understood and checked.

In the initial LAPD investigation no information was initially released concerning flight path findings, a step which might normally have been expected in the course of a trial. Presumably this omission was based on a judgement that the facts were obvious, although other issues which were likewise regarded as obvious were explored at the trial at some length. When the records did become available, moreover, they contained no support documentation, and only the most cur-

CEILING PANEL GRID
 AMBASSADOR HOTEL PANTRY

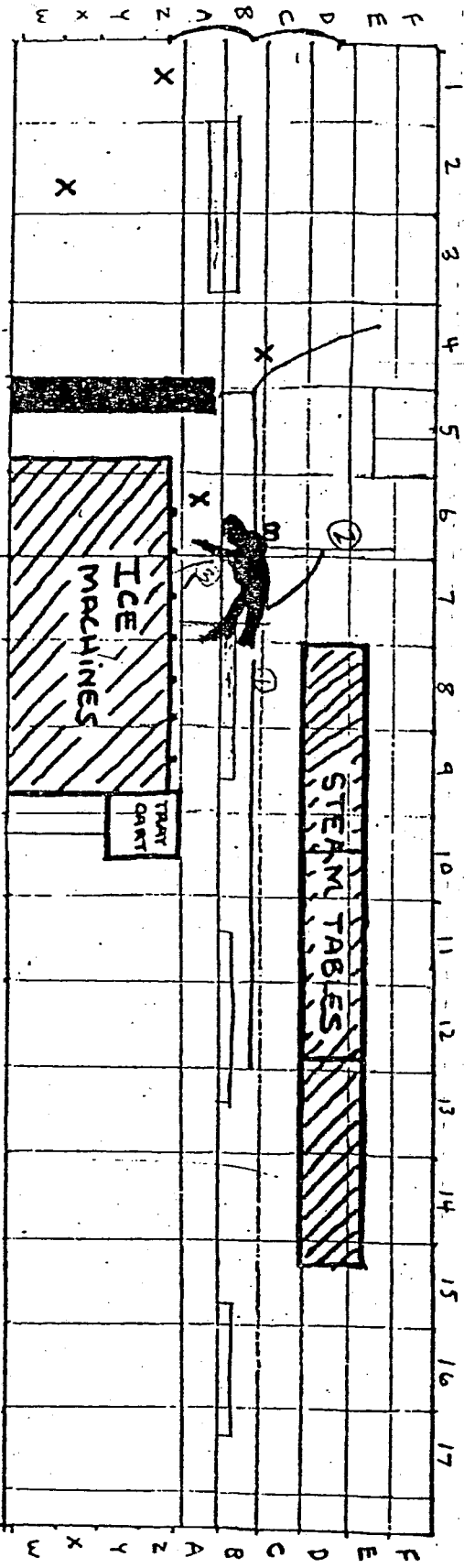


Diagram showing probable layout of the Ambassador pantry in relation to ceiling tiles overlaid. Specific features depicted are important in determining the physical circumferences of the shooting.

- ORANGE ■ = FLUORESCENT LIGHTS
- GREEN ■ = FLOOR CRACK
- RED ■ = KENNEDY BODY
- X = X IN POLICE PHOTOS
- 00 = FOOTPRINTS IN SOME PHOTOS
- ∧ = CENSUS TIE

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sory description. This presumably was also because they were not felt to be necessary, since the police felt that these matters were a matter of complete certitude. Whenever questions have arisen, in fact, about any of these issues, they have consistently been stonewalled, scoffed at, or brushed aside. So complete was the official certainty about these matters, that in spite of Chief Houghton's professional concern about recovering evidence, the critical evidence of the ceiling tiles was routinely permitted to be destroyed in June of 1969, because, in the words of one official spokesman, "they were too large to fit in a card file." It is obvious that such destruction could only be the consequence of the most serene assurance on the part of the authorities that they had explained the physical circumstances of the case so perfectly that even the preservation of central evidence would be superfluous.

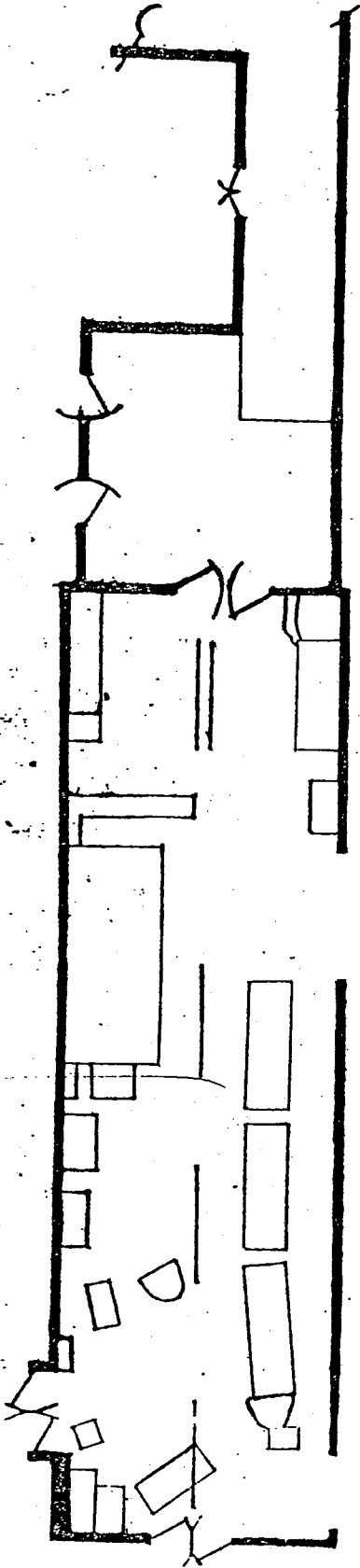
Against this background of exceptional assurance, the discovery of even minor ambiguities and problems in the police versions would naturally come as a shock. And since the case presented by these authorities had been billed as definitive and unquestionable, the unshakeable pillar upon which the one-gun theory rests, is it really unreasonable to assume that to the extent that this foundation is rickety, the one-gun theory itself is in danger of collapse?

II. Sirhan's Economy of Fire

If the one-gun theory is correct, only eight bullets could have been fired during the shooting, all of them by Sirhan. To believe that Sirhan fired all four shots which struck Kennedy or his clothing, it is also necessary to believe that Karl Uecker was wrong when he said that he grabbed hold of Sirhan's arm after the second shot. In fact, Uecker's position was misrepresented at the trial when chief prosecutor David Fitts told the jury that this had happened only after the fourth shot, although no evidence was ever cited to support this claim. Even if Fitts were right, however, at least four of Sirhan's shots would have had to be fired from the surface of the staem table, with his gun hand restrained and his head in a headlock. In view of these facts, and in view of the scattering and ducking which occurred once the firing broke out, Sirhan's ability to make each shot count was uncanny. At least it is not what one normally would predict from a gunman encountering the disadvantages as to accuracy which Sirhan faced.

According to the official account, every bullet fired by Sirhan struck a victim. Of the bullets whose existence was admitted by the authorities, in fact, none could have possibly been denied by them in any case. Seven bullets were recovered in hospitals from six separate victims, thus establishing their existence beyond a doubt. An eighth, moreover, was unmistakably in existence, based on the two additional bullet flight paths through Senator Kennedy's clothing and body. According to the official account not one bullet was ever recovered at the scene of the crime during the extensive search of the pantry which took place. ^By the account of the police themselves,

Ambassador Hotel Pantry
(LAPD drawing as of 6/24/68)



Official police diagram of the Ambassador pantry
and adjacent area to the west.

a number of possible bullet holes were examined. In fact, at the meeting on June 9 at which the initial plans for Special Unit Senator were made, DeWayne Wolfer reported to Chief Houghton and others, "It's believable how many damn holes there are in that kitchen ceiling. Even the doors have holes in them which can be mistaken for bullet holes."

(97) After the examination was completed, all of these holes were disposed of in one of two ways: either they were not caused by bullets, or they were consistent with the flight paths of bullets whose existence had already been known. No evidence of any additional bullets, according to police, was ever discovered anywhere at the crime scene.

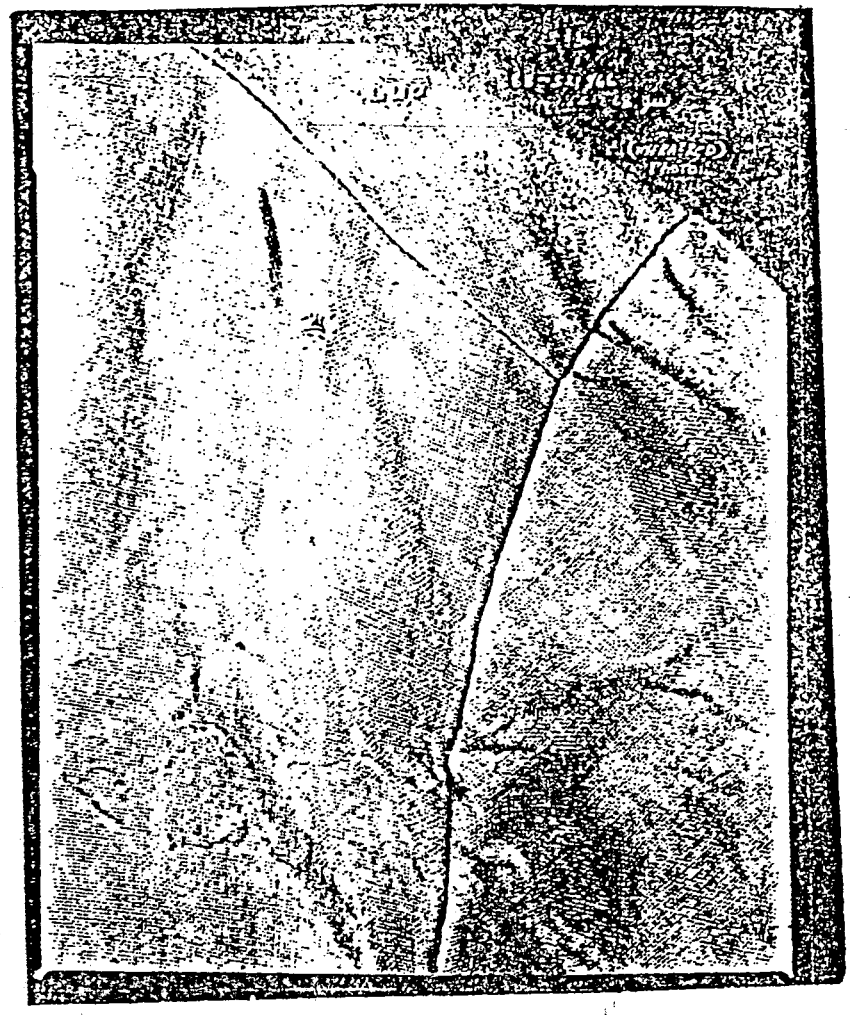
Of the holes or indentations examined in the pantry, only three were admitted to be bullet holes, although the existence of at least two other ricochet marks was also admitted. Two other holes, in the left pants leg of Ira Goldstein were also accounted for as having been caused by the bullet which struck Irwin Stroll in the leg. Thus, including ricochet marks, at least 18 holes of entrance or exit were said to have been caused by eight bullets. (Fatal bullet - 1; Schrade forehead bullet - 3; RFK sixth cervical vertebra bullet - 1; RFK through and through bullet - 1; RFK through and through bullet - 3, Goldstein bullet - 1; Stroll Bullet - 4; Weisel bullet - 1; and Evans bullet - 4.) Such a profusion of bullet damage is by no means inconceivable, just as it is not inconceivable that all the bullets apparently struck victims, or that numerous other holes existed on the scene that looked like bullet holes and were not. Nor was the coincidence of these three sets of findings inconceivable either. But it might be said that such a coincidence is at least worthy of close examination to insure that coincidence is all that it was.

III. RFK Shoulder Pad Shot

Not only have the Los Angeles authorities routinely withheld the information on which their positions are said to be based but on at least one occasion their position itself was withheld or shifted. This was the case with Wolfer's bullet # 2, otherwise known as the shoulder pad shot. In view of the confusion which has existed about this shot even among the authorities, a comparable confusion on the part of critics and independent parties is understandable. Although in the Dallas case, the Warren Commission discreetly omitted the curious photographs of President Kennedy's shirt and coat from any of their published volumes, it is also true that the information about this shot was available and was subject to careful analysis from many quarters. For seven and a half years after the Robert Kennedy assassination, however, no photographs of the bullet holes in Senator Kennedy's coat were available. During this period any consideration of this question resembled the process of groping in the dark.

Though no known record exists of when he first received it, by the Thursday morning following the assassination, DeWayne Wolfer was already examining Kennedy's coat, and conducted "infrared studies" on it for about an hour. On Friday, the day of the Grand Jury, for an apparent period of between 10:00 and 2:55 he conducted "microscopic and chemical tests" on the coat. By June 9th, at the Special Unit Senator meeting, he stated, according to Chief Houghton, that "a fourth shot pierced the shoulder pad of (Kennedy's) coat and proceeded into the ceiling." Yet later in Houghton's book, in a description of the shooting, the following account appears: "It is likely that the second shot passed harmlessly through Senator Kennedy's shoulder pad, but it struck Paul Schrade at the crown of his head." No explanation

EXHIBIT L.



Police photograph of right rear shoulder pad area of Kennedy's coat. Arrows point to the location of the two bullet holes. Two lower bullet holes are not shown.

of this apparent change of opinion was given by Houghton. The description of this shot which appeared in the July 8 memo, however, was consistent with second opinion which Houghton had cited:

#2 - Bullet passed through the right shoulder pad of Senator Kennedy's suit coat (never entered his body) and traveled upward striking victim Schrade in the center of his forehead...

Six years later, however, a legal petition submitted on behalf of victim Paul Schrade would suggest that this change of opinion was ill-advised. "We tend to agree," the petition said, "with Mr. Wolfer's original analysis, which may have been subsequently altered due to its unwelcome implications as the the number of bullets fired in the pantry on June 5, 1968." (12/4, p. 14, l. 8)

Wolfer's revised judgement was corroborated in his schematic diagram, which showed the "shoulder pad bullet" emerging from Kennedy's suit coat and striking Paul Schrade in the forehead. The diagram also suggested that since Kennedy was facing north at the time this bullet entered from the rear and exited at the front at a sharp left-to-right angle. A careful check of the upward angled of this bullet, based on the chart, indicated that its upward slope was approximately 27 degrees, and that it was fired in a direction only 17 degrees north of due west. Though these angles had to be measured independently the official explanation of this shot, based on available information, appeared to be in rather good shape.

In October of 1971, however, the issue of the shoulder pad shot unexpectedly re-emerged. In the report of an official police board of inquiry on the qualifications of DeWayne Wolfer for promotion replies were made to some of the charges raised in an affidavit by William Harper which was attached to the Blehr complaint. Taking Wolfer

at his word, Harper began with the assumption of a back-to-front shoulder pad shot, and proceeded to discuss some issues which troubled him about its implications. This, however, brought forth the following astonishing reply in the Board of Inquiry report: "An examination of the coat worn by the Senator at the time of the shooting will refute the conclusion made by Mr. Harper that a shot 'went through the right shoulder pad of the Senator's coat from back to front!'" How such a finding upheld Wolfer's examination is somewhat mysterious, since the authority for the back-to-front direction was Wolfer himself. It was, however, offered nonchalantly as part of the board of inquiry verification of the quality of Wolfer's credentials. It also threw into confusion the issue of the direction of this particular bullet.

A number of problems existed at this point in reconciling the general police theory of a single gun with the shifting explanations which were put forward concerning shot number two. At the trial of Sirhan (4193) Wolfer testified that the shoulder pad shot, like the ones which struck the Senator's body, was fired from very close range, apparently one inch. This produced the difficulty that not only was it necessary, in contradiction of eyewitness reports, to have Sirhan's gun within close range of Kennedy not just for one shot, but for the time that would have been required to fire all four. Thus the possibility that Sirhan could have fired all these shots was that much more unlikely.

Secondly, the issue of the direction of this shot, thrown suddenly in doubt by the Police Board of Inquiry, was also critical. If the shots which struck Kennedy or his clothing were fired from different sides, it was particularly difficult to understand how only one gun could have been involved. This would have made it necessary for Sirhan to have fired point blank shots from the rear, watch Kennedy.

apin around in place, and then fire a point plank shot from the front, all before his arm had been pinned by Karl Uecker. Since this was the startling implication of the Board of Inquiry position, a serious burden of improbability had been placed on the one-gun theory. The same report which had stated so blandly that "It is unrealistic at this time to theorize that a second gun was fired....," itself appeared to unveil, in the process of exonerating Wolfer, evidence that made a second gun conclusion almost inevitable.

There was also, however, a serious problem with a front-to-back hypothesis as well. Though Paul Schrade's memory of the moments before the shooting was imprecise, he recalled being behind Kennedy, and not in front of or perpendicular to him, as shown in the police schematic. Obviously any bullet which entered the shoulder pad from back to front could not possibly have struck Schrade if he were behind Kennedy. Thus, even on the basis of limited knowledge, there was serious difficulty in reconciling the one-gun theory with either of the possible flight-paths for the shoulder pad shot.

Another seeming discrepancy added further grounds for confusion. According to Wolfer's oral report quoted in Special Unit Senator, one of the holes apparently caused by the shoulder pad shot was "an entrance hole two inches below the shoulder seam in the right sleeve." Was this simply a garbled description, or did the shoulder pad shot enter in fact in the upper right sleeve? (N) At the trial of Sirhan, moreover, in describing this shot Wolfer said that it "traveled through the lining, exited through the upper portion of the sleeve and went out." Did this bullet enter and exit the shoulder pad or enter and exit the sleeve? If it "exited through the upper portion of the (right) sleeve, moreover, how could it have been traveling from right to left, like the other shots?

Ch 10 - 7-17-76

546



A probe is passed through the holes in the shoulder pad of Kennedy's coat in an attempt to simulate the flight paths during the Kennedy shooting. The steepness of the angle casts doubt on whether the bullet in question could have struck Paul Schrade

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The difficulty in obtaining a definitive explanation of the shoulder pad issue was suggestive of the larger difficulties which have plagued researchers attempting to solve more complex ones. When one of the authors met, in late 1973 and 1974 with officials from the Police Department and District Attorney's office, this question was one of the obvious ones requiring an answer. None, however, was forthcoming. At one point officials took one side and at others accepted the possibility of the opposite. In the written list of evidentiary questions which was finally submitted, item number I.2 in the section entitled "Specific Tests or Items of Evidence That Could Clarify Unresolved Issues" was the following: "Test right shoulder pad of RFK's coat to learn whether bullet went through it front-to-back or back to front and at what angle." Not only did this question remain unanswered, however, but none of the evidence which might have shed light on it was made available, or, so far as could be discerned, even studied by the authorities who were asked about it.

When, in February of 1975, Stern Magazine in Germany did a story on the Robert Kennedy case, having extensively interviewed officials in Los Angeles in preparation, their chart of the shoulder pad shot showed it proceeding from front to back. The choice they faced was a poor one, and whatever answer they arrived at would have to be tentative, given the status of the evidence at the time.

It was seven years and five months after the assassination when the mysteries about this elusive shot finally began to clear. In September (?) Judge Robert Wenke issued his order that certain photographs and records in the case be furnished. Among these were five clear photos of Senator Kennedy's coat and additional photos of police

reconstructions of the shooting. On the basis of these photographs and of the testimony of DeWayne Wolfer at a special hearing on September ____, it was clear that the shot had come from back to front. All the confusion on this point over the past seven years had been unnecessary, the statement in Harper's affidavit had been correct, and the rebuttal of the police board of inquiry had been wrong.

It was also clear that the trajectory of this bullet was upward, and apparently much more steeply than shown on the Wolfer schematic diagram. This is suggested both by the police photograph showing the location of the shoulder pad holes, both of which were to the rear of the seam, and neither of which was in the sleeve. This photograph alone suggests an upward angle which makes it doubtful that the bullet involved could have hit anyone in the head unless he had been eight or nine feet tall or unless he was leaning his forehead against Kennedy's shoulder and neck at the time. Photographs ____ and ____ show police reconstruction photos in which probes are passed through shoulder pad holes in order to simulate the flight of shot #2 through them. Although two different arm positions are tried, the resulting upward angle appears much closer to 60 degrees upward than the 27 degrees suggested by the official schematic drawing. 60 degrees is also much more consistent with the angles of the other two gunshots striking the Senator's back (59 degrees and 67 degrees respectively). However if the angle on the schematic diagram is altered to correspond with this graphic reconstruction, the shot clearly misses Schrade's head, which the diagram places almost two feet from the head of Kennedy. And to move Schrade into the unnatural and unlikely position which would be required to enable him to be struck by a steep upward shot not only appears contrived, but contra-

552

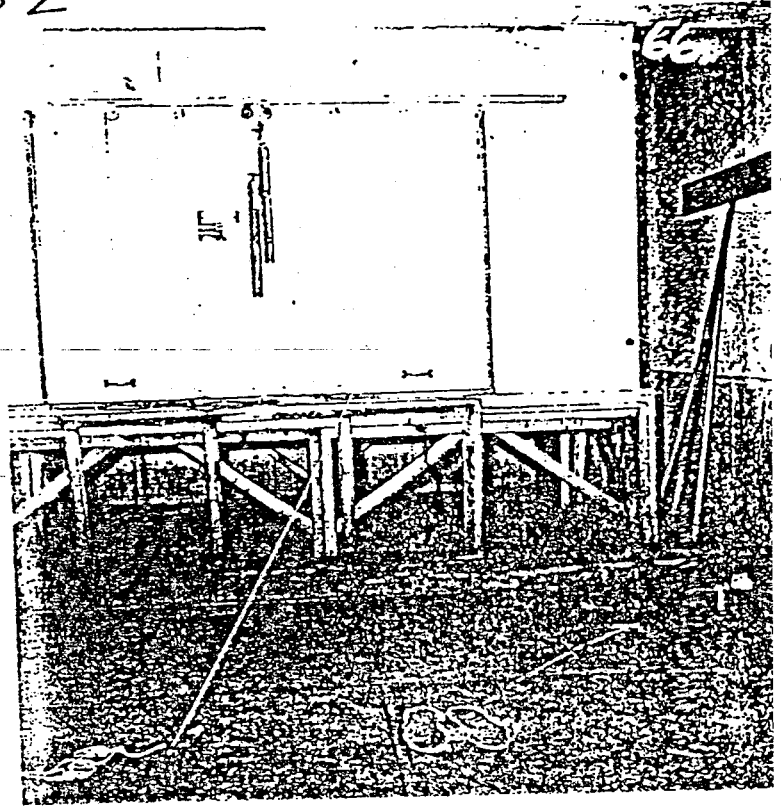


Fig 2
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Police photograph from the reconstruction of the shooting staged in the Ambassador pantry on June 11. The string apparently represents the pathway of the through-and-through bullet, with the chalk marks depicting Kennedy's feet and the direction of his fall.

80

dicts the recollections of Schrade and is unsupported by the known testimony of any other witness.

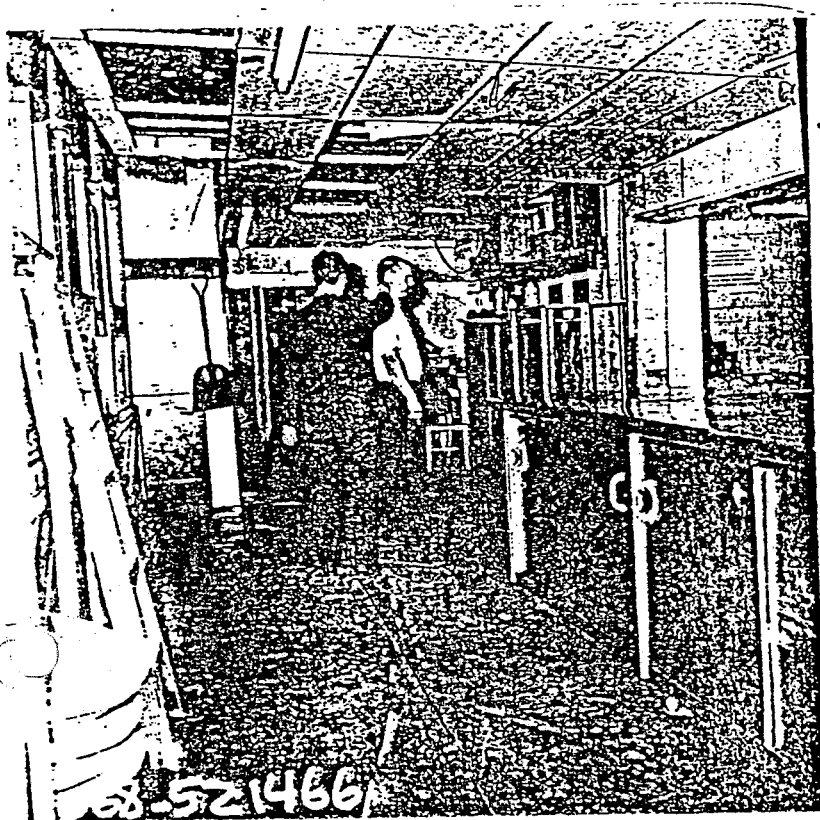
In short, on the basis of evidence long withheld it appears at least very questionable that the shot that grazed the rear shoulder pad of Senator Kennedy's suit could have caused the wound inflicted on Paul Schrade. A new bullet is therefore required to account for Schrade's wound, and this raises the total of bullets to nine. On the basis of this one piece of evidence alone, the one-gun theory is open to very serious question.

Perhaps the most plausible basis for the theory that this shot might have hit Schrade is the supposition that perhaps Kennedy was falling forward at the time, altering the axis of his body and his coat. Eyewitness accounts, however, are uniform in the judgement that Schrade was the first to fall, and Wolfer's schematic diagram shows Kennedy standing directly upright. The assumption that Kennedy was veering forward, moreover, raises additional problems in explaining the manner of Kennedy's fall.

III. Kennedy's Location to North or South

The official police drawing places Kennedy as facing due north at the time of the shooting, and this positioning is repeated in photographs of the physical reconstruction on June 11. For reasons examined in chapter three, there is some cause to doubt the accuracy of this depiction. Yet even assuming it is entirely valid, Wolfer's schematic fails to account for the proposed terminus of the shot which passed through Kennedy's body or for the origin of such a shot from the gun of Sirhan.

The shot which went through the Senator's chest is said to have



Police simulation of the fatal shot. Dr. Koyuchi portrays Sirhan, and is both beyond the edge of the steam table and well to the south of it.

"passed through the ceiling tile, striking the second plastered ceiling and was lost somewhere in the ceiling interspace." (N) The schematic diagram places this hole approximately $6\frac{1}{2}$ feet beyond the edge of the steam table, which seems consistent with the location of this hole on panel C-6 as picture in figure _____, a reconstruction photograph taken by the police. However, both the reconstruction photographs and the horizontal section of the schematic diagram also agree in placing Kennedy to the south of the formed by the south edge of the steam tables. This line is almost exactly beneath the border between ceiling panel rows C and D. Yet it is also known from the autopsy that this shot passed through Kennedy's body at an angle of only 33-35 degrees to the left of front. (p. 26) Given Kennedy's position as depicted in the horizontal schematic diagram it is obvious that any bullet passing through his body from this position was extremely unlikely to have been capable of striking panel C-6 at all. If it had, moreover, it would have had to enter from the front rather than the back, since Kennedy was facing north standing near the northern edge of the panel. If Kennedy were in this position, the back to front shot 35 degrees to the left which is described in the autopsy would most probably have landed in the neighborhood of panel E6. Therefore, on the basis of both the reconstruction photos and the Wolfer schematic diagram, there is no way that the location of Senator Kennedy can be reconciled with the uncontested flight path of this bullet based on the autopsy report.

In order to make a C6 shot work, Senator Kennedy would have to either be rotated even further to the left or be moved about 3 - 4 feet to the south.

If the official placement of Kennedy's position is too far north for the through-and-through shot to be plausible, however, it is too far south for the official version to be convincing in relation to Sirhan's known location. When Sirhan first emerged in Kennedy's direction from in back of the tray stacker, Karl Uecker's first reaction was that another member of the kitchen help wanted to shake Kennedy's hand. Since Uecker wished to get Kennedy through the kitchen as quickly as possible, he moved to block Sirhan, wedging him against the edge of the steam table. Thus, although Sirhan may have extended his arm perhaps a foot beyond the edge of Uecker's face, Uecker acted to stop him even before he was aware of any gun. In view of this obstruction, it is clear that Sirhan's firing was done, of necessity, from the south edge of the steam table. Uecker's testimony on this point is graphic:

- A -I was trying to pull him (Kennedy) and the man who shot, I could feel him coming around me and falling over the steam table and start shooting....
- Q - And you indicated something rushed past you. Was that a person that rushed past you?
- A - On the right side?
- Q - Yes.
- A - Yes, it was the one who shot...
- Q - Your body was in between this person's body and --
- A - -- and Senator Kennedy.
- Q - And his arm reached over your body when he fired --
- A - Around me, around me, not over me.
- (Grand Jury, pp. 150-151, emphasis added.)

Had Sirhan had an unobstructed access to Kennedy, he would normally have continued forward right into him while firing, much as Jack Ruby shot Lee Harvey Oswald. Instead, however, his access was blocked by Uecker on his left and the steam table on his right. "All I really saw," testified eyewitness Frank Burns, "was an arm extended, holding a gun... right next to the serving table..." "Do

you recall," Burns was asked at the trial, "whether there was some object there that prevented you from seeing other than the arm and the gun?" Answer: "...Yes, there were people and one of the persons was someone in a black suit, one of the maitre d's, I presume..."

A number of separate witnesses all remember seeing only an arm and a gun, extended toward Kennedy at the left of Karl Uecker, who was blocking his path.

Immediately before the shooting, banquet captain Edward Minasian was walking abreast of Uecker, preceding Kennedy through the pantry. "Just at that precise moment that I turned to my left," he testified at the Grand Jury, "out of my side vision, my peripheral vision, I noticed someone dart out and lean against the steam table, and I saw a hand extended with a revolver..." In its issue of June 11, Time Magazine gave a similar summary: "... the gunman managed to get across the room, prop his right elbow on the serving counter and, from behind two assistant maitres d'hotel, fire at his victim just four feet away.

Two police photographs exist from the night of the assassination, in which apparent attempts to reconstruct Sirhan's location have begun. In the close-up shot (photo _____) an unidentified man is shown standing up against the edge of the steam table with his finger pointing out in the manner of the barrel of a gun. He appears, moreover, to be approximately six feet to the west on the first steam table. The point where Sirhan was standing against this table cannot be established conclusively by eyewitness testimony. (N-Burns, others) Yet on the basis of both the eyewitness accounts and of the apparent police understanding of these locations on the night after the shooting, the north-south aspect of the placement of Sirhan has never been in question.



533

An apparent simulation of Sirhan's shooting position during the police reconstruction on the morning of the shooting. Though leaning on the steam table, the officer is well back from its western edge.


In view of this fact, it is disconcerting to note that on June 11, the date of the Time Magazine issue, the police were staging and photographing a simulation with no apparent relation to these facts. In photos _____, _____, and _____, Dr. Noguchi, who was asked by the police to assume the role of Sirhan, was approximately 2½ feet ~~south~~ of the steam table's edge, a placement absolutely insupportable on the basis of the evidence. And several months later (the exact date - unlike that of Wolfer's official reports - has never been given (N)) Wolfer's schematic diagram located all but two of Sirhan's shots as originating at distances ranging from approximately nine inches to a foot and a half south of the steam table. (N) One of these ~~two shots~~ was the bullet which was said to have ricocheted through the ceiling tiles and struck Mrs. Evans. ~~On~~ On the basis of the two ceiling tile holes and the ricochet mark on the ceiling, the angle of this particular shot could not be debated. The point to which the line of these holes led, moreover, was approximately three feet to the north of the steam table's south edge. This point was also approximately six feet to the rear of the steam table, thus agreeing with the position of the man in the photograph posing against the steam table with his index finger out. This east-west placement is approximately four feet to the rear of the location given for the origin of all of Sirhan's other shots.

Implausible as was the southward placement of Sirhan in the simulation of the schematic drawing, it was the only way in which, on the basis of the police theory of Kennedy's location and direction, a shot from Sirhan could be reconciled with the angles of ~~shot~~ number two through Kennedy's body and the ceiling tiles above. And even by this device, as is clear from viewing photograph _____, it is still quite impossible to produce a line through Kennedy by which a hole can

be accounted for in panel C-6.

By attempting to steer between Scylla and Charybdis, the police reconstruction achieves the worst of both worlds. Kennedy is placed both too far north to account for a hole in C6 and too far south to enable Sirhan to have fired the shots described in the autopsy. Even by rearranging Sirhan's location in a way which is absolutely unsupportable, the official version still fails to regain plausibility. Only one alternative was apparently available to the authorities, that of rotating Kennedy's body even further to the left. Such a solution would be even more at odds with eyewitness testimony than their current theory, however, and would create additional difficulties in accounting for the manner of Kennedy's fall.

IV. Kennedy's Location to East or West

The difficulties in the official location of Kennedy's east-west position are as great as those concerning his north-south location, and perhaps even more obvious. In this case, moreover, there are serious discrepancies in the official police account. The Wolfer schematic diagram locates Kennedy about three feet to the west of the western edge of the first steam table, approximately beneath the line dividing rows six and seven of the ceiling panels above. The photographic reconstruction, however, (see figure _____) shows chalk marks for Kennedy's feet just to the west of a crack in the floor running north to south approximately four feet to the west of the edge of the steam table. 

By either account, however, the distance between Kennedy and the steam table was substantial. Yet there is no way that Kennedy's location at such a distance can be reconciled with the uncontested conclusions as to muzzle distance both of coroner Noguchi and of police expert Wolfer. The official efforts, therefore, to impeach the eyewitness testimony that the distance of Sirhan's gun was greater than their muzzle distance findings seem curious at best. The same conclusion seems almost inescapable on the basis of their own official photographs and charts.

Lines are drawn in the Wolfer schematic diagram to represent shots which struck Kennedy, as well as other parties. Yet if these lines are to be taken seriously as describing the flight paths of the bullets, at least two of them flatly contradict the scientific conclusions concerning muzzle distance as well. According to Wolfer's trial testimony, gunshot number three (labelled four in the diagram) was fired from as close as one inch, and no further than six inches from the Senator. Yet the schematic diagram seems to suggest not only a most unnatural angle for this shot, but a muzzle distance of approximately 10 inches. The fatal shot to the head was scientifically determined to have been fired from one inch. Yet according to the schematic diagram it was apparently fired from six or seven inches.

Possibly the lines indicating muzzle distance in the drawing are only careless or approximate, or perhaps the lines were extended to make the angles more clear (though no note exists to this effect). But even so, the problems of distance remain insoluble. By placing Kennedy far enough to the west to receive a 59% upward shot capable of creating the known hole in panel C-6, the police solved one problem.

~~Ch 10 - 7-1-51~~

537



Helder and Noguchi attempt to line up the holes in Kennedy's coat with a string representing the pathway of a bullet which was said to have penetrated panel C-5.

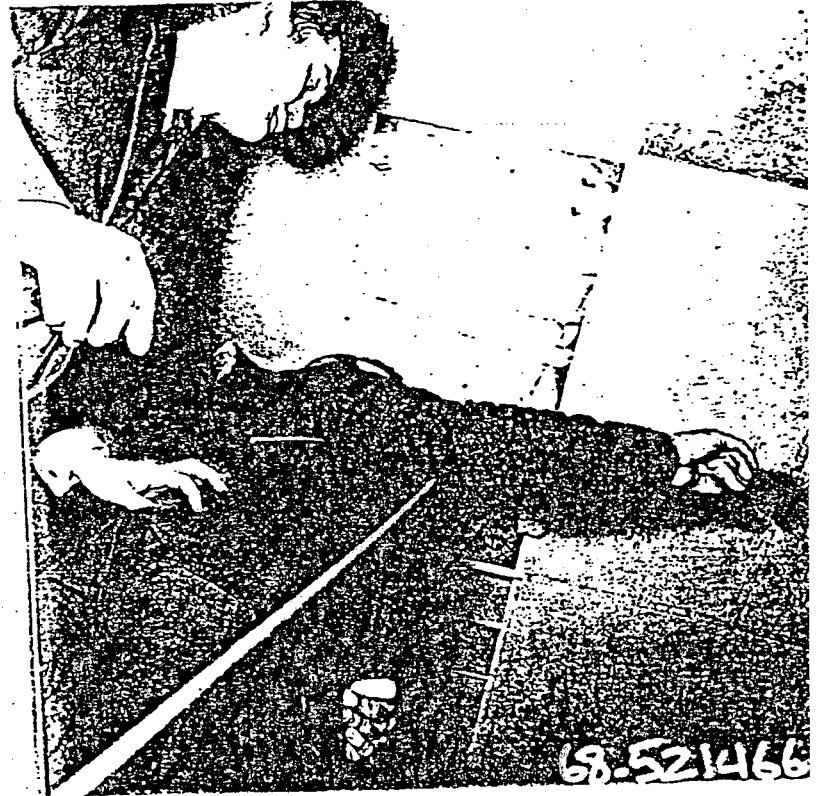
B

As in the case of the north-south problem, however, an adjustment which enables one problem to be eliminated only exacerbates another. Although the diagrams and photographs of the police place Kennedy three to four feet west of the steam table, it is almost inconceivable that Sirhan's gun could ever have been extended this far. Based, therefore, on Kennedy's east-west placement by Wolfer, it is difficult to understand how he could have fired the close-range shots which killed Robert Kennedy.

The length of Sirhan's arm, based on that of other persons his height, was somewhat less than two feet from the armpit to the tip of the fingers. Little distance would be added to this reach by the length of an Iver Johnson .22, a weapon with a barrel only two inches long. Allowing, however, for stretching, the length of the gun, and portions of Sirhan's shoulder, we can liberally estimate the length of his reach at $2\frac{1}{2}$ feet. If an even more unwarranted assumption is made and the shoulder of Sirhan is placed just at the edge of the steam table, his reach falls just short of the six inches from Kennedy, which, according to Wolfer's conclusions, was the outside limit of the shots which struck Kennedy's clothing. (N) The fatal shot to the head, moreover, was indisputably fired from a distance of only about one inch, and if the authorities are correct that Kennedy was facing north at the time, his head was perhaps six inches further from Sirhan's reach than the edge of his right shoulder, the part of his body closest to the steam table. Even, therefore, the enlistment of assumptions on the brink of possibility does not seem to salvage a one-gun theory if Kennedy's placement to the west of the steam table is as these documents claim.

~~Ch IV~~ ~~Fig 19~~

FIGURE 4.20



547

Another shot of the attempt to correlate the angle of a bullet entering panel 3-6 with the shot which entered and exited Kennedy's body.

Just, however, as the problems of Kennedy's north-south placement were dealt with by transplanting Sirhan several feet closer to the ice machine, the problem of Kennedy's direction east to west was solved by shifting Sirhan even beyond the edge of the steam table. Photo _____ from the police June 11 reconstruction shows Dr. Noguchi, who had been asked to pose as Sirhan, emerging from behind the ice machine in the direction of the Senator. By the point of photo _____, he has clearly come beyond the edge of the steam tables in clear field. Yet this explanation of Sirhan's forward location is as unconvincing as that of his distance from the steam tables, and is refuted by the same identical testimony.

Not only did no witnesses ever speak of seeing Sirhan beyond the steam table's edge, but the testimony of Karl Uecker and others appears to rule out this possibility conclusively. Had Sirhan broken past the southwest edge, Uecker would have had no surface against which to wedge him. At that point Sirhan would presumably have surged ahead unobstructed, impeded only by individuals who might want to tackle an assassin with a loaded gun. Instead of pressing him forward against an enclosing surface, Uecker would have had to take hold of Sirhan from his torso and wrenched him backwards toward the table. According to reconstruction photograph _____, this is what he must have done, but no whisper that such a sequence took place has ever been heard from Uecker or any other witness. Had Sirhan not been constricted against some other object, it would not have been Sirhan's arm and gun which Burns, Minasian and Cesar saw emerging from beyond Uecker's left side, but Sirhan himself. Unless Sirhan was staying back deliberately to give his target a chance, nothing would have prevented him from dupli-

532



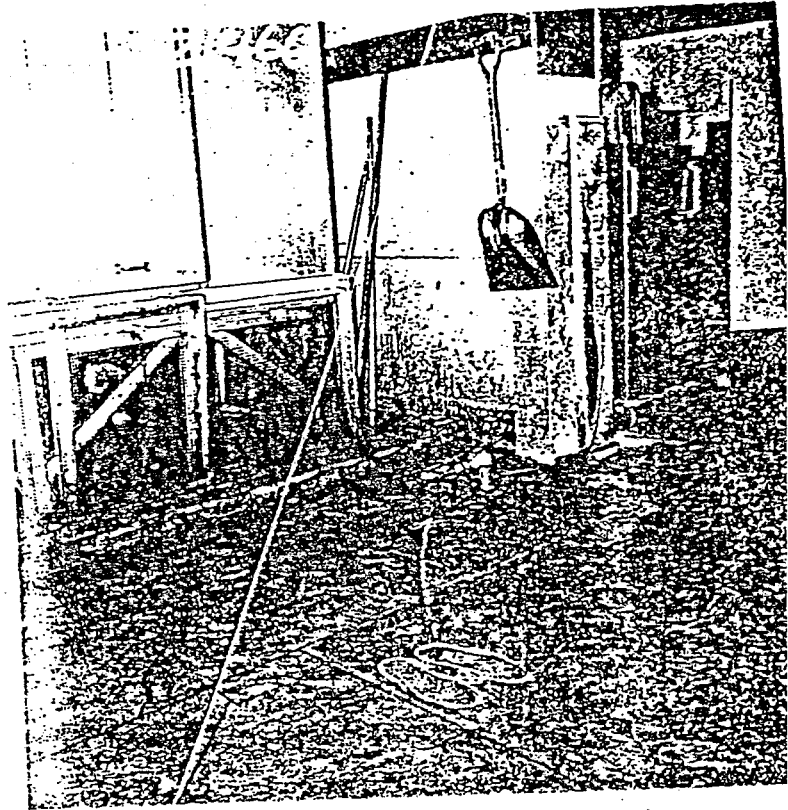
Hoguchi portrays Sirhan as he emerges from behind the tray stacker and approaches Senator Kennedy. The edge of the tray stacker is visible on the left, next to the ice machine.

cating the Jack Ruby pattern. Had that been what the witnesses saw, it is unlikely that this assassination would be a matter of dispute today.

It is highly unlikely, in fact, that Sirhan's gun even reached the edge of the steam table, much less that his arm stretched out to a full length beyond it. The motion of Sirhan's arm, when grabbed by Uecker, was diagonally towards the rear, not backward towards his shoulder. The gun was pushed against the steam table's top, moreover, not against the air, and probably formed an angle of something like 45 degrees with the table's south edge. At this point Uecker began banging it against the surface, trying to loosen Sirhan's grip. (N)

The balance of the evidence, though not conclusive, suggests that Sirhan was toward the middle or even rear of the steam table when he began firing, rather than the front. This is the position in which he is placed by the apparent police simulation photograph on the morning after the shooting. It is also his apparent position in one of the first photos taken after the event, in which the gun was still apparently in Sirhan's hand. (N) An Associated Press diagram which appeared on June 6 showed the gunman at the rear of the steam table, and the Time Magazine chart places the gun at approximately the table's center. On the basis of these locations it would obviously have been impossible for Sirhan to have come anywhere near the location of Kennedy as it is depicted in the schematic diagram.

At the trial of Sirhan, in contradiction to the police chart and simulation, however, and on the basis of information he did not cite, chief prosecutor David Fitts stated that Kennedy had been standing



543

Chalk marks showing the official version of the location of Kennedy's feet and the direction of his fall when shot. This placement of Kennedy on the floor should be noted in connection with the intersecting cracks on the lower left portion of the photo.

Dr

only eighteen inches from the corner of the first steam table. This would tend to make it more plausible, though not yet likely, that Sirhan's gun might have gotten within range to fire close shots. Yet it failed to account for the problem of the ceiling panel terminus of shot number two, a concern of which the police were quite aware at the time of the June 11 reconstruction. Since no information concerning ceiling panels or the details of bullet pathways were presented to the court, no necessity existed for the prosecution to square the new eighteen inch figure with the requirements that other physical evidence factors might have imposed.

Photograph _____ shows a string being projected upward from the floor and into the hole in panel C-6 which was said to be caused by the shot which traveled in and out of Senator Kennedy's chest. The angle of the string appears to approximate an angle of 59 degrees upward, the upward angle of that shot through the Senator's body. What is apparently being attempted is to line this shot up with the body of Senator Kennedy in such a way that the angle through his coat and chest will match the angle of the string. In order to accomplish this, however, given the height of the panel from the floor, Kennedy had to be standing at least three feet from the steam table's edge. The ceiling panels overhead were approximately _____ feet above the level of Kennedy's armpit, where this shot entered. Yet any angle 59 degrees which travels five feet upward need only originate _____ feet away from a point directly below the location where the angle reached 5 feet. The hole in panel C-6, according to both the schematic diagram and photographic evidence, was approximately $6\frac{1}{2}$ feet away from the edge of the steam table. Any point _____ feet closer to the steam table would still be _____, away, which matches very well

with the distances in the photo reconstruction. If Kennedy was standing upright and if, as the police claim, the bullet through his chest was the same bullet which caused this hole in panel C-6, he could not have been any closer to the edge of the steam table. This is what the officials discovered in their examination on June 11, a finding which Wolfer's chart reflects. The only way to validate even the 18 inch distance presented at the trial is to tilt Kennedy forward at the beginning of his fall. In fact, however, Kennedy's fall was backwards.

The Wolfer diagram itself acknowledges at least one shot from several feet back on the steam table, and there is no apparent reason that the others could not come from this location as well. The bullet thus acknowledged on the chart was the one which, according to officials, was fired by Sirhan, entered ceiling panel C6 near its center, ricocheted above ceiling panel C5, and exited near the eastern edge of panel C4. This bullet is then shown to continue down the pantry, striking the head of Elizabeth Evans, and thus accounting for one wound, two holes and one ricochet mark with a single bullet. Unfortunately, however, there may be some difficulties about this theory also.

IV. Evans Shot

None of the claims advanced on behalf of the alleged Evans bullet have been proven impossible, but the cumulative doubts which they suggest are worthy of note. From the photographs of the crime scene examination on the morning of June 5, it is clear that an explanation for the holes in panels C4 and C6 was an early concern, and the embryonic theory of the bullet which was later said to have struck Evans was al-

ready being evolved. By the time of Wolfer's bullet inventory of July 8 it had chrysalized in its final form.

Sometime on the morning of June 5 a string was run from the top of the first steam table up to an apparent bullet hole in panel C-6. (photo ____ This was then extended to the ceiling (photo ____) and passed through a second hole in panel C4. (photo ____). Whatever evidence might have existed as to whether the holes in C4 or C6 were entry or exit holes has not been preserved. Finally, the string emerging from the hole in C4 was extended outward in an attempt to locate the terminus of the bullet path. The string was passed through the south doorway of the swinging doors, though actually this door had been closed during the shooting, and traced all the way to the wall adjoining the east edge of the Embassy Room stage. But no bullet was to be found. Later it was reported that the supposed bullet involved was the same one which had struck the head of Mrs. Evans.

This account suggests a number of problems, however:

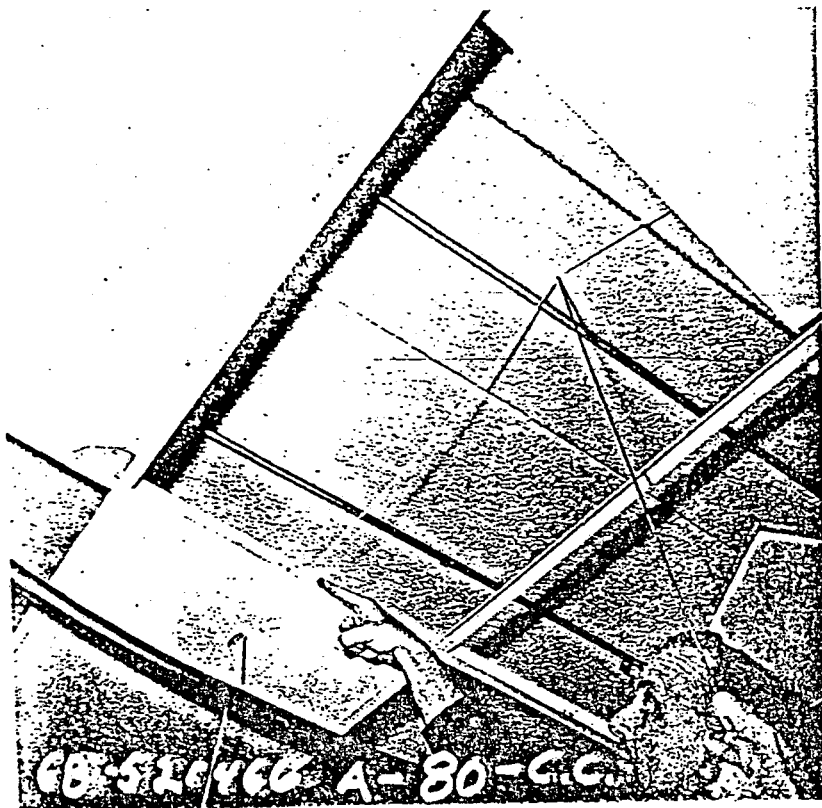
- 1.) The bullets Sirhan fired were .22 caliber, long rifle, hollow point mini-mags. Because hollow point bullets are specially designed to fracture and mushroom on impact, an effect not dissimilar to that of dumdum bullets, there is serious question as to whether such a bullet could do what is attributed to it in this case. The bullet is said to have penetrated a ceiling panel nearly an inch thick, struck a hard surface at a 25 degree angle and still maintained the velocity to exit through a second panel and proceed down the pantry. No record exists of whether any official tests were ever conducted to determine if this were feasible. If such a ricochet were not possible, the two holes in question would both have had to be entry holes, an explanation which would require two additional bullets beyond those admitted by the authorities. (N)



An attempt is made on the night of the shooting to trace the apparent course of a possible ricochet shot. String is used to reproduce the pathway of a bullet bouncing off the ceiling and penetrating two acoustical tiles.

2.) The official schematic diagram suggests that the hypothetical Evans bullet approached the ceiling at an angle of 25 degrees and exited it at an angle of 15 degrees. It also suggests that the distance traveled by this bullet within the ceiling interspace, an area approximately one foot deep, was 2.3 feet before the ricochet and 3.3 feet after the ricochet. Bullets when they ricochet do not behave like billiard balls or beams of light and the angle of exit is typically smaller than the angle of entry. It is plausible, therefore, that a bullet entering at a 25 degree angle could exit at 15 degrees. However no testing of this possibility, however, has ever been recorded. (N)

3.) The police horizontal schematic diagram shows Mrs. Evans standing directly in front of the center divider of the swinging doors, about three feet to the east. In this they had little choice, because, as mentioned before, if the bullet which struck her had caused both the holes in C6 and C4 ricocheting above C5, her forehead would have had to be in line with the plane described by these three points. Unless something had halted this bullet beforehand, it would have struck either the center divider between the swinging doors, or the south door through which (see photo) the police apparently felt the bullet must have gone on the night of the assassination. Yet in another photograph from the assassination night (see photo) chalk marks are shown depicting where victims had fallen. The mark showing the apparent location of victim Evans, however, lies approximately under panel I3, whereas according to the police, Evans was hit while she was standing at a point midway between panels B1 and C1. The chalk marks were presumably made to help locate where victims fell on the floor and they seem to account reasonably well for the positions of Kennedy, Schrade, and Weisel. Yet the location of the chalk mark



540

The apparent ricochet point of the shot being studied is shown, above panel C5. It was later asserted that this was a ricochet shot which struck Mrs. Evans in the forehead.

B

for Evans is about nine feet from the location the police must assign to her in order to enable her to stop a bullet which had caused the two holes in ceiling panels C4 and C6. It is certainly not inconceivable that Evans might have been standing nine feet from where she fell, or that the chalk mark location might have been somewhat misplaced. The probability of such occurrences, however, does at least bear examination. This is particularly true in view of the fact that unless Evans were standing in front of the center divider at the time she could not have been struck by a bullet responsible for the two ceiling panel holes. Thus, an extra bullet.

4.) At the trial of Sirhan, Mrs. Evans stated explicitly that she was bending over looking for her shoe at the time she was hit.

Q - At the time of the popping noise you also lost a shoe, is that what you said?

A - I believe it was at the same time. Everything happened very fast.

Q - Did you bend over to try to get your shoe back?

A - Yes.

Q - What happened then, what is your next recollection?

A - As I was bending over, my head was hit with something....

Q - Did you feel pain at that time from the area of your head?

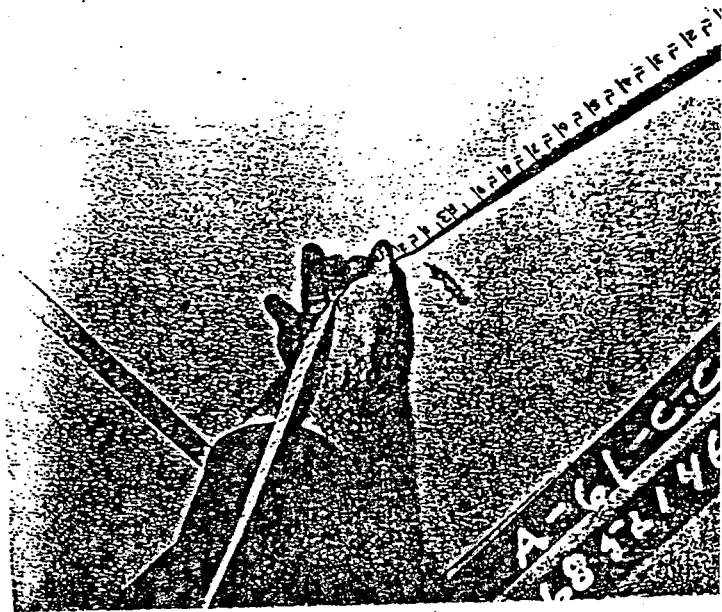
A - No.

Q - But you did observe blood coming from your head?

A - Yes. (3932-3933)

However in direct contradiction to this testimony at the trial the schematic diagram of Wolfer shows Mrs. Evans to be standing at bull height, being struck by a bullet at the tip of her forehead. If Elizabeth Evans was correct that she was bending over at the time she could not have been hit by a bullet which also caused holes in panels C4 and C6. If Ira Goldstein was correct that Irwain Stroll was already on the floor before the point of the bullet which passed through Goldstein's clothes, this could not have been the same bullet by which

6/5



557-5

Measurement is taken of hole in panel C-4 which was identified as an exit hole for the reputed ricochet shot which was said to have struck Mrs. Evans.

Stroll was hit. In both these cases the eyewitness testimony was inconvenient to the official theory, and in both cases it was dealt with by simply ignoring it.

5. According to the Grand Jury testimony of Dr. V. Faustin Bazilanskas, the doctor who attended most of the victims at Central Receiving Hospital (p. 202-203) the bullet which struck Mrs. Evans entered her forehead and traveled backwards at an upward angle into her scalp, just beneath

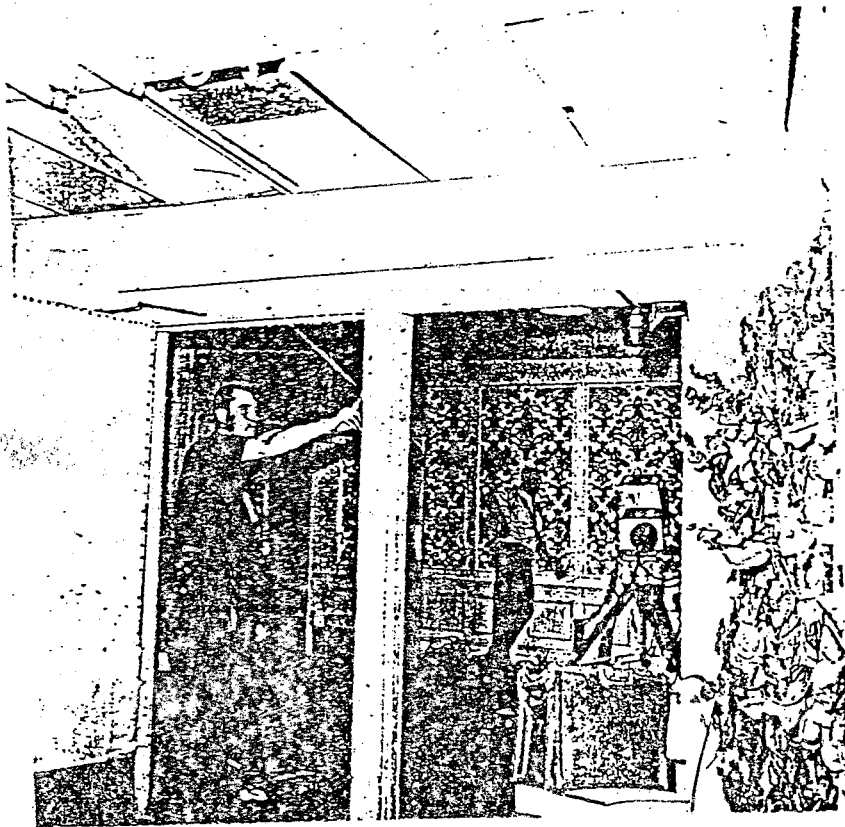
~~her skin. Yet according to the police, the bullet by which she was~~
struck proceeded at a downward angle from the ceiling. A shot at a downward angle would be much less likely than a flat or upward shot to enter the body at an upward angle, and would be much more likely either to progress down toward the forehead or to smash into the skull directly, causing greater damage. If Evans was in fact bending over at the time she was hit, however, as she testified, such a wound might have been caused by a bullet ricocheting off the floor.

6. The projectile which struck Elizabeth Evans, if it was fired from Sirhan's gun, was a Cascade mini-mag bullet with an initial weight of approximately 39 grains. Fragments recovered from her head, however, had a total weight of 30.6 grains, more than 75% of the original weight. Additional fragments, moreover, remained in her skull. Even assuming that all the problems and discrepancies cited above can be resolved in the police department's favor, the question remains as to whether a hollow point bullet, having previously struck three separate surfaces, having emerged with sufficient momentum to smash into the forehead of a human being, could still retain over three quarters of its original weight. As with the other questions listed above, this result cannot be ruled out as impossible. No demonstration that it was possible, however, has ever been made.

557



Police photograph taken on June 11, showing the apparent official position on Kennedy's location before and after his fall. The cracks on the floor provide useful reference points.



528

FIGURE 5.13

Continuation of the string tracing the pathway of the alleged Evans shot. The doorway through which the string is passed was actually closed at the time of the shooting.

V. Senator Kennedy's fall

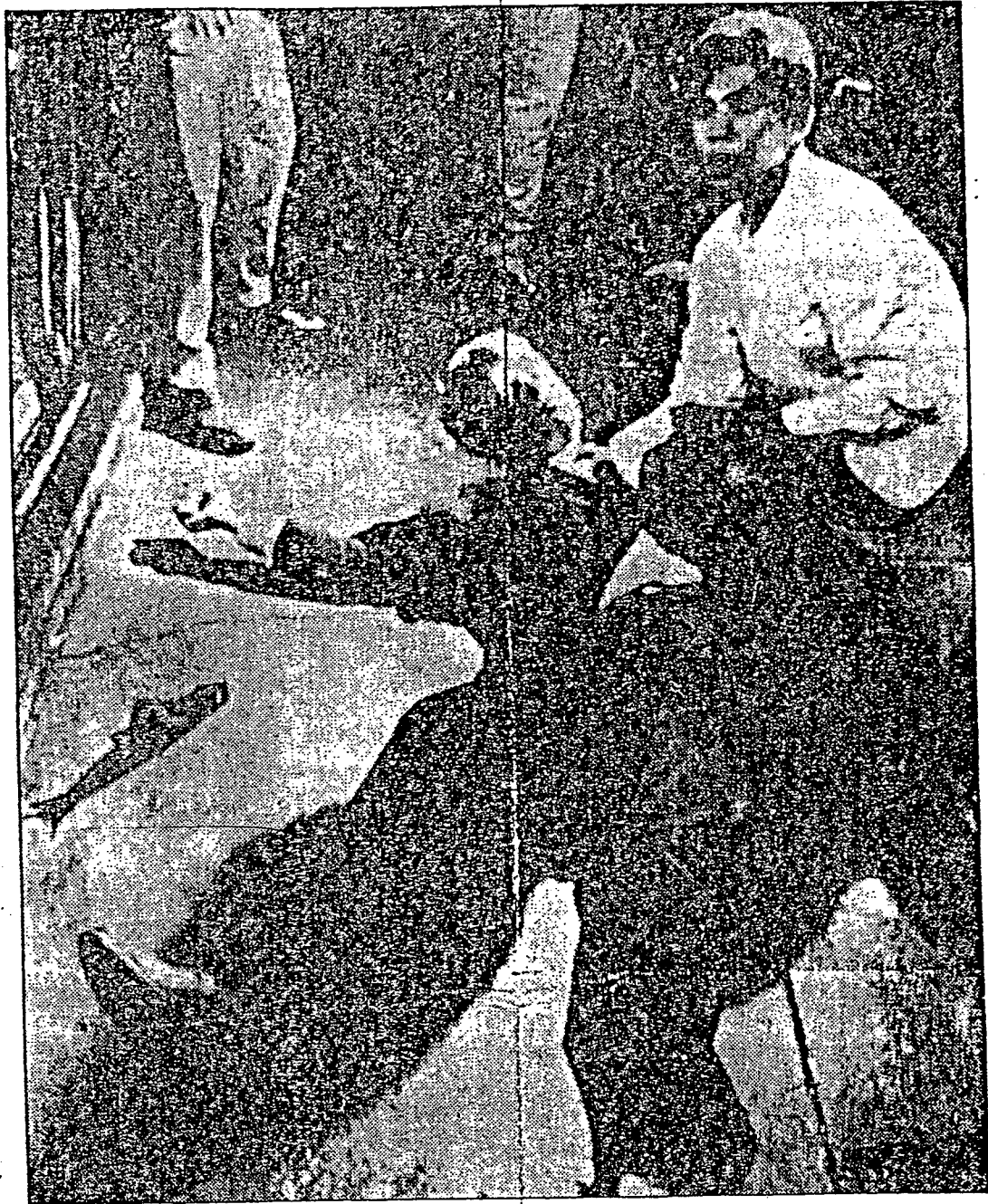
The issue of the Senator's fall is in no way deal with in the schematic diagram, only his upright position being given. On the night of the assassination, a chalk mark was apparently placed on the floor to denote his position near the western edge of the steam table and the wooden partition which stands nearby. (photograph _____) This, however, may not have been drawn until after he was removed to the hospital, and it only denotes one specific point, without indicating whether this represents the tip of his head, the center of his body, or the edge of his feet. There is, however, a clear and unambiguous placement of Kennedy's fall in the June 11 reconstruction, represented by two chalked foot marks on the floor and an arrow showing the direction on the floor in which the body fell. (photographs _____ and _____) In it, Kennedy's feet are placed just to the west of one of the cracks in the concrete floor, pointed due north, at a location which is consistent with the location given for Kennedy on the later schematic diagram. On the basis of this consistency, and in the absence of any subsequent indication of change on the part of the authorities, it must be assumed that this remains the official position on the issue of the Senator's location on the floor. This position is substantially in error.

Eyewitness testimony is not precise concerning the manner of Kennedy's fall, but about his final location there can be no doubt. During the first few instants after the shooting, he lay on the floor alone, as the persons in the immediate vicinity converged on the apparent assailant. The first person to his side, in fact, busboy Juan Romero, was a hotel employee with whom he had shaken hands only seconds before. Romero spoke to Kennedy quietly, attempted to loosen his collar, and handed him some

rosary beads. At the instant when Romero reached Kennedy's side, perhaps 30 seconds after Kennedy had struck the floor, the scene was captured by photographers for Life Magazine and the Los Angeles Times.

These photographs provide significant information to a perceptive viewer. They show, for example, a clip-on tie lying on the floor to Kennedy's left. This tie, it later turned out, belong to Ace security guard Thane Eugene Cesar, who had been escorting Kennedy through the pantry at the time. (N) As suggested by the location of this tie, as well as by later accounts by Cesar, the guard was very close to Kennedy at the time. The photographs also show, however, certain cracks in the concrete floor in the vicinity where Kennedy lay - a ^{straight} wide crack running roughly parallel with his body to his left, a crooked crack extending southward just beneath his arm, a second wide straight crack running northward to his right, and a small short one very close to his left foot. On the basis of these cracks, Kennedy's initial location on the floor of the pantry can be placed precisely. This location, along with the location of these cracks and other reference points in the area are depicted in diagram _____. On the same diagram is also depicted the location of the chalk markings drawn by police showing the supposed location of Kennedy's feet at the time of the shooting and the placement of his fall. As is apparent from the diagram, these markings are mislocated by approximately five feet.

From the beginning of the case it should have been apparent that these cracks and the photographs of Kennedy's body in relation to them comprised critical evidence concerning the manner of the shooting. The crack marked number one in the drawing is uniform for a long stretch of pantry floor, running east and west, and was apparently laid down in the original construction of the hotel. It is clear from the lo-



Busboy Juan Romero kneels beside Robert Kennedy moments after he was shot. Kennedy's right shoulder is near the position where police were later to place his feet in their June 11 reconstruction. The clip-on tie to Kennedy's right had apparently fallen from the security guard who accompanied him through the pantry.

cation of this crack, and from the wooden two-by-four beneath the ice machine to Kennedy's right, that the direction of Kennedy's head after his fall was to the west or slightly north of west in relation to his feet. Yet in the official police reconstruction, the chalk mark depicting Kennedy's location runs at an angle diagonal to crack #1, rather than parallel with it, approximately 40 degrees or 50 degrees south of the actual angle of his body.

Crack number two extended to Kennedy's right, beneath his arm, and crack number three extended to his left beneath his shoulder. Crack number four, which runs diagonally between cracks two and three, is covered by Kennedy's body in the original photograph, but is clearly apparent on photograph _____. A simple comparison of these photos makes it obvious that the point at which Kennedy's feet were placed in the official reconstruction is, in fact, the point where his right shoulder fell based on the actual photographic evidence of the crime scene. Since the distance from Kennedy's feet to his shoulder was approximately five feet, Kennedy's height being 5 feet ten inches, the total discrepancy between the police version and the original photographic evidence is approximately five feet. In the words of the mild comment on this subject made in a legal brief filed on behalf of Paul Schrade: "This substantial error of five (5) feet in the very confined, crowded area of the pantry, adversely affects the accuracy and reliability of the entire official trajectory study, particularly with respect to the bullets which struck Senator Kennedy or passed through his clothing." The aspects of the study related to "the bullets which struck Senator Kennedy or passed through his clothing," are, moreover, precisely those features of the study which are the most important.

"Since the LAPD's location of Senator Kennedy's body on the floor of the pantry is clearly in error," the brief continued, "the most reasonable inference is that the precise location from which Senator Kennedy fell is likewise in error." Unfortunately, however, although testimony exists on Kennedy's fall, it is not as explicit and detailed as one might wish. Better accounts may exist in the interviews taken by police, but the transcripts of these, with few exceptions, have been completely withheld.

According to the testimony of Karl Uecker "...I heard the first and second shot and Mr. Kennedy fall out of my hand. I lost his hand. I looked for him and saw him falling down." (GJ p. 143) On the same point, attorney Frank Burns testified at the trial as follows: "He was aiming the gun down at the Senator as he was falling. He was stepping forward following the fallen body." (p. 3401) "When I ducked," said security guard Than Eugene Cesar, "I threw myself off balance and fell back and when I hit... I fell against the ice boxes and the Senator fell down in front of me." (Kaiser) And according to Martin Patrusky, a waiter, "The guy looked like he was smiling and he looked like he was going to shake hands with him, and he reached over like this, and then the firing just started, and the next thing I know... I seen Kennedy starting to go down on his knees." Like many other witnesses, Edward Minasian saw Paul Schrade fall first. "I pushed the two of them (Uecker and Sirhan) against the steam table," he said. "I saw the fellow behind the Senator fall, then the Senator fell." (trial. see also GJ 161.) There is less eyewitness testimony about this point than on some others, and the testimony which exists is not as graphic as one would wish. A certain amount may be learned, however, by considering the relevant locations in the Ambassador Pantry at the time.

All four shots struck Senator Kennedy from the right rear. Yet as mentioned before, he did not fall on his stomach but was lying on his back with his head to the west and his feet to the east. Based on Kennedy's precise location after his fall it is likely that his feet at this point were barely beyond the edge of the first steam table, reaching to a point just below the west edge of ceiling panels A8 and B8. There was no eyewitness testimony either that the Senator turned over or that he was turned over by others after his fall, and already a pool of blood had begun to form below his right ear.

If Kennedy fell backward, ^{however,} the only alternative available to authorities in attempting to account for the shoulder pad shot or to reconcile the second hole in ceiling panel C6 with the flight path of bullet #4 through Kennedy's body and a more plausible eastward location for Kennedy is lost. In order to support either of these theories, it is necessary to alter Kennedy's axis so that a steep angle in relation to his body becomes only a moderate angle in relation to the floor. Stated differently, in order to make a convincing case for the pathways of these two bullets it seems to be necessary to argue that Kennedy was falling forward as the bullets were fired. But it is difficult to visualize how Sirhan could keep his gun muzzle near point blank range from Kennedy's receding upper torso, especially with Karl Uecker blocking his path. Moreover, the obvious result of a forward fall is that one lands on one's front, and Robert Kennedy landed on his back.

The location attributed to Senator Kennedy in the photographic reconstruction of June 11 is that his feet are standing perhaps a foot to the west of the line between ceiling panels six and seven, almost

directly below the juncture of panels B and C. By the time of the schematic diagram later in the year, this location had been shifted perhaps a foot to the north and another foot to the east. In spite of these differences, however, the essential implications of these locations for the backward fall that Kennedy must have made are very similar. Based on the chalk markings and chalk arrow of photograph _____, it is clear that the view on June 11 had been that he had fallen directly backward, towards his left side. Had Kennedy fallen directly backwards from a position facing north, however, his head would probably have been to the south on the floor and his feet to the north. If Kennedy's body were rotated even further leftward before his fall, however, facing his body to the west or northwest, his head would have landed toward the east or southeast and his feet to the west or northwest. In either the case the official police position, therefore, or of the most logical revision of that position which one might expect, a normal backward fall of the kind one would expect and most witnesses describe, utterly fails to account for Kennedy's final position. Kennedy's feet were nearly due east and his head was nearly due west.

A normal backward fall, therefore, is inconsistent not only with the official police version but with the one-gun theory itself. In order to reconcile the official position of Kennedy's standing location with the reality of where he finally lay, the following sequence of motions would have to be argued: Kennedy was standing three to four feet to the west of the steam table, facing north or northwest and shaking hands. Sirhan emerges suddenly toward him, extends his right arm far beyond the steam table, and fires four shots at very close range. Two of the shots strike Kennedy in the chest and one in the head, splitting on impact

and penetrating the brain in two different paths. The angle of the body shots is steep, but the angle of the head shot is only about 15 degrees. At this point, having been hit three times from the rear, Kennedy staggers backward nearly three or four feet, in the direction of the gunman, stops, executes a turn of 90 to 180 degrees to his right, and then falls back upon the concrete floor. Had the police thought that this was the reality at the time of their photo reconstruction, the marking of the Senator's fall would presumably have differed from the simple straight line which they drew. Nonetheless, such a new and improbable theory of the fall may yet be enlisted in an attempt to validate the locations for Kennedy which are offered on the official official schematic and in the photo reconstruction.

Thus it emerges that the locations in the pantry at the time of this incident may after all have some importance, Chief Houghton's judgement to the contrary notwithstanding. If we could prove exactly where the Senator was standing or how he fell, if we knew the precise location from which Sirhan's gun was fired, if the locations of the other victims after their falls was a matter of record, confusion and possibly much worse might have been avoided. All of these factors turn out not to have been negligible, and the minor details of distance and position may bear on larger issues than officials apparently dreamed. Though he regretted the fact that the blood spills and other clues had been removed, the fact may have been much more regrettable than Houghton was ever aware.

The official police account of the bullet flight paths in the Robert Kennedy assassination has been fragmentary, undocumented, and internally inconsistent. By now it should be clear that it is untenable as well. Even the most cursory examination of the evidence currently available establishes the gross insufficiency of the current explanation, even apart from the questions of apparent bullet damage never recognized in the official theory. "Shamefully superficial" was how the study was described in the petition for new testing which was filed by Paul Schrade, and it is difficult to disagree with that judgement. Presumably the police and Los Angeles authorities agree with it as well. What other explanation is there for the extreme reluctance and delay with which even the most elementary facts have been released, and the continued resistance to permitting access to the most basic and innocuous information?

Whose privacy would be invaded by allowing the public to know the physical dimensions and measurements of the Ambassador Hotel pantry? What harm could come of permitting access to the diagrams and charts which witnesses marked on at the Grand Jury and trial, and without which their oral testimony is largely obscure. What sudden bashfulness and embarrassment is responsible for the official unavailability of interviews with witnesses which were submitted into evidence at the trial of Sirhan and proclaimed as public information by the then District Attorney of Los Angeles? Is it the fear that some of these accounts might prove inconvenient, as did the testimony of Mrs. Evans and Ira Goldstein?

Were any other studies of these issues done by the authorities apart from the lamentably meagre ones of DeWayne Wolfer? If so, who did them and where are they now? Was the elementary step ever taken of correlating the ceiling panels in the pantry with the locations below them? What did that analysis seem to show? A scale model of the pantry and hotel area was made in preparation for the trial. 1700 photographs and 20 reels of film were collected, and detailed diagrams were made of the locations of different witnesses. What is the rationale for keeping all of this material under lock and key, for prohibiting even the most limited and reasonable access to it? Is this a matter of "national security?" Or is it a matter of personal security for officials charged with a public trust, but violently unwilling to allow public scrutiny of the manner in which it was discharged?

"There were eight bullets fired, seven recovered, and there were never any more shots fired," said Los Angeles District Attorney Joseph P. Busch. "That's the fact." Yet the more certain officials are of these conclusions, the more eager they should be to allow the tests which presumably would substantiate them. The prouder they are of their investigation, the more they should be willing to reveal the documentation on which it was based. The more that they feel they have been unjustly attacked, the greater should be their zeal in spreading before the public the facts that vindicate them. Why, if the confidence in the flight path conclusions is as great as proclaimed, should none of these logical reactions be forthcoming?

An exhaustive analysis of the issues discussed in this chapter would require a book in itself, and additional information, resources and time would be needed before such an analysis could be complete.

All that a brief discussion can do is to outline some of the major questions, without describing the full complexity of the factual background or exploring the detailed ramifications of alternative explanations. Not only has the above discussion been simplified, therefore, but it does not include all the significant facts already known. If Kennedy were facing eastward at the time he was shot, for example, the shoulder pad and through and through bullets would have traveled in a northeast direction, and emerged at completely different locations than those described by police. Some evidence exists, in fact, of possible bullet damage in these probable areas. After the shooting and the removal of some of the ceiling tiles, a considerable quantity of plaster apparently fell on the eastern edge of the first steam table, possibly dislodged by a bullet. (see figure ____.) Though the plaster was noticed by a television newsman at the time (N) no record exists of the checking of this possibility or of conclusions which might have been drawn about it. Questioned in 1971, moreover, Wolfer said he recalled three different accoustical tiles with holes in them. (N-157) The records, however, show only two tiles, and only two are suggested with holes in any of the crime scene photographs turned over following the 1975 court order. Possibly this was simply a failure of Wolfer's memory; if it was not, then an additional bullet hole exists which cannot be accounted for without a second gun.

Any new analysis of the flight path evidence should include in its examination evidence of possible bullet damage which was not recognized in the official reports. It should provide, in addition, for sophisticated photographic analysis, close examination of testimony and interview transcripts, and the initial or further questioning of relevant witnesses. Experimental studies and simulations should also be employed,

as well as close and professional examination of the medical records of the wounded victims. The study of bullet flight paths is a technical and scientific enterprise, and all of the fields of expertise and specialized methodologies required should be brought into play. Without the photographic and documentary evidence in the possession of the authorities, any such study would be severely hampered from the outset.

The main function of the official flight path theory is to explain the known facts convincingly and in a manner consistent with the one-gun hypothesis. This, we believe, it completely fails to do. If, however, as we argue in this chapter the current theory of bullet flight paths is in ~~disarray~~, is any revised or different theory available on the basis of which a one-gun theory can be squared with the known facts? The evidence currently available invites skepticism, but we are willing to be convinced. We will never be convinced, however, the current theory in shambles and the identity of Robert Kennedy's assassin therefore in doubt, no organized effort whatever is required to discover the truth. Fantastic as such a position sounds, it remains the current posture of every official agency of Los Angeles law enforcement.

On December 4, 1975, a petition filed by Paul Schrade before Los Angeles Superior court asked that experts be appointed to conduct a thorough study of the bullet flight path evidence in the Robert Kennedy assassination. "It is hard to conceive of a case," the petition stated, "that would call for a ballistic examination more than this one." Such an examination, it said, was "absolutely imperative if we have any desire whatsoever to discover the truth surrounding the assassination of Senator Kennedy." (p.13) The same petition also requested the questioning ^{under oath} of critical witnesses and the furnishing of all official

reports and documentation of the crime scene investigation by police on the morning of June 5. All of these measures were blocked in court by the Los Angeles District Attorney and the Attorney General of California. Moreover, no independent action has since been taken by these agencies, in court or out, to comply with these urgent and reasonable requests.

Until official cooperation is secured in the search for the truth in these matters, private efforts will continue, even without the benefit of the voluminous evidence which has purposefully been withheld. Only an impartial, thorough, and officially sanctioned investigation, however, can finally resolve the current doubts, explore the available alternatives, and determine if, on basis of the flight path evidence, the one-gun theory of the Robert Kennedy assassination can in any way be salvaged.